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OF

AMERICAN LEATHER MAKING

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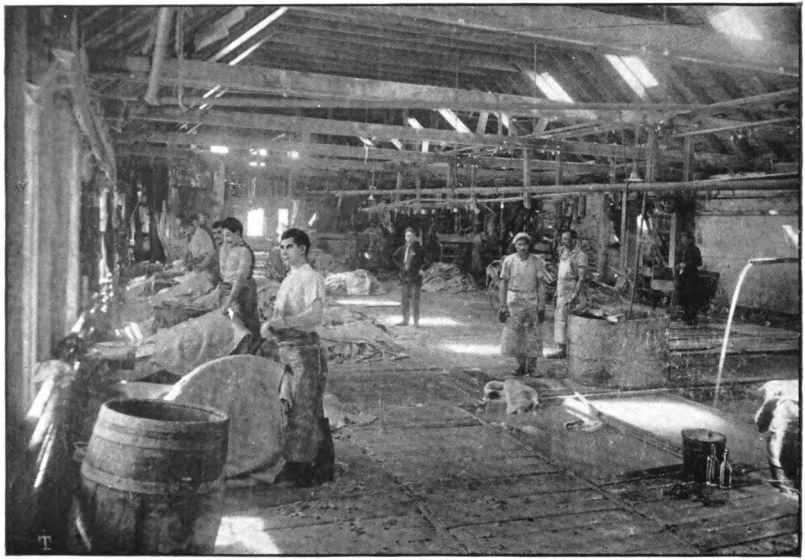
AN HISTORICAL SKETCH OF LEATHER MAKING.

"Leather making is an old trade, I imagine," said The Student visiting the tannery. "I've read of Simon, the tanner, of the time of Christ."

"In his time, leather making was an ancient trade," interrupted The Tanner. Turn back to Exodus, and you'll read of ram's skins, dyed red, which shows that they not only made leather in those early days, but they colored it.

"That's surprising to me. I supposed that colored leather was something new. Did people of the early days of the world make much leather?" inquired The Student.

"Indeed they did," replied The Tanner. "They used leather for clothing, water bottles, shields and harnesses and other articles."



A BEAM HOUSE.

Showing vats for liming hides, and men unhairing hides by hand.

"Is it known who made leather first?" asked The Student. "He must have been a great genius, like some inventors of our time."

Nobody knows who made the first leather," replied The Tanner. "We are told that the early people of India, Egypt and Arabia made leather by tanning skins with roots and barks, the Chinese made leather by tanning skins in mud containing salts of alum. They made some very good leather in olden days, too. There are little pieces of Egyptian leather, at least 3000 years old, in the British Museum, and if you go there, you may see it."

"Is the making of such leather a lost art, like the making of Damascus steel?" asked The Student, "or have the methods of ancient tanners been handed down to our times?"

"That's a long story," replied the tanner. "As I have heard it told, the Moors learned to make leather of the Egyptians, or Arabians. The Moors conquered Spain. They set up tanneries in Spain, and they made leather which was called morocco leather.

That's the origin of our morocco leather of today. The Moors tanned their leather with sumac, as do tanners today."

"But how did we learn of morocco leather from the Moors?" interrupted The Student.

"We learned of it through the English," replied the tanner. "English traders imported morocco leather, and called it Spanish, or beyond seas' leather. There's a tradition of the early making of morocco leather in England, that I would like to tell, if you will listen.

"I would be glad to hear it," answered The Student, settling down in his chair.

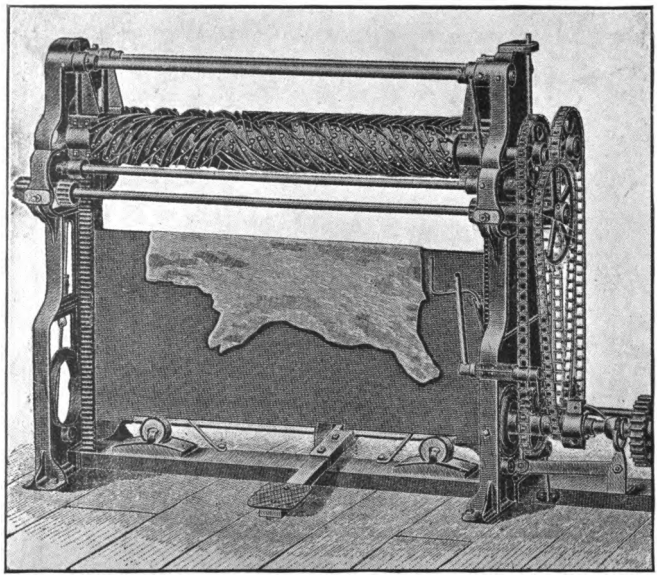
"As I've heard this tradition," resumed The Tanner, "patents to make Spanish, or beyond seas leather were granted to Roger Huexenbury and Bartholomew Vernerick, and a monopoly in trade in sumac, the chief tanning agent in making morocco leather, was granted to Roderic Lopez, a Spanish physician. That was in the time of Queen Elizabeth. Lopez plotted against Antonio, a merchant, who may have been a competitor in trade, or in politics. That's my surmise.

I do not know the facts. But Lopez was certainly executed. And as I've heard the story, Shakespeare made Antonio Antonio and Lopez Shylock in The Merchant of Venice."

"That's a most interesting story," said The Student. "I never realized that there was so much of human interest in a plain every-day task like the making of leather."

"Oh! I've told you but a bit of the romance of the leather trade," continued The Tanner. "Some of its stories are as fascinating as the tales of adventures of knights of old. And I like them more, too, for I believe it is better for men to make leather for shoes for people's feet, a plain, every-day task, as you say, than it is for men to go around with battle axes, trying to chop other people up, under some pretext or other that nobody understands."

"That's what I believe, too," replied The Student, "but you were telling me how we of today learned of the Moors to make leather."



AN EARLY TYPE LEATHER WORKING MACHINE.

Showing the table that moves the hide against the knives, and the cylinder that moves the knives against the hide.

"That's so! exclaimed The Tanner. "I did run off the course of my story. But it's easy to return to it. The English learned to make Spanish, or beyond seas leather, as they called the leather of the Moors. When the English came over here and settled this country, they established tanneries, and made leather.

"And that was the beginning of American leather manufacturing, I presume," said The Student.

"No, it wasn't," answered The Tanner, "though it is perfectly natural to take it for granted. The fact is that the Indians were the first American tanners, and they were very skillful makers of leather, too."

"I never thought of that," exclaimed The Student. "But I can understand that it must have been so."

"It was so, true enough," continued The Tanner. "The Indians were dependent upon leather for their hunting shirts, their trousers and their moccasins, and even their wigwams. They didn't know how to cut lumber for houses, nor to make nails to fas-

ten houses together, nor to make cloth for clothing.

"But how did they make leather, if they had no tools of iron? Your shop, I noticed, is full of machines and tools of metal."

"Their ways were simple," went on The Tanner. "The Indian would kill a deer with a stone axe. With a knife of stone, or bone, he would take off the hide, and clean it. Then he would wash it in a stream, to clean it and next he would put it in the ground, until its hair cells softened, and he could push off the hair with a sharp piece of stone, or wood. After he cleaned the skin on both sides thoroughly, he would rub it with some dust of a rotten stump of a tree. There was tannin in this dust, and it would tan the skin. Then he would take some fat, perhaps fat from the deer whose flesh he had made into venison, and he would rub the skin with fat until it became soft and supple and also waterproof. He made very good leather," mused The Tanner. "If he hadn't he might have perished in the cold storms of winter."

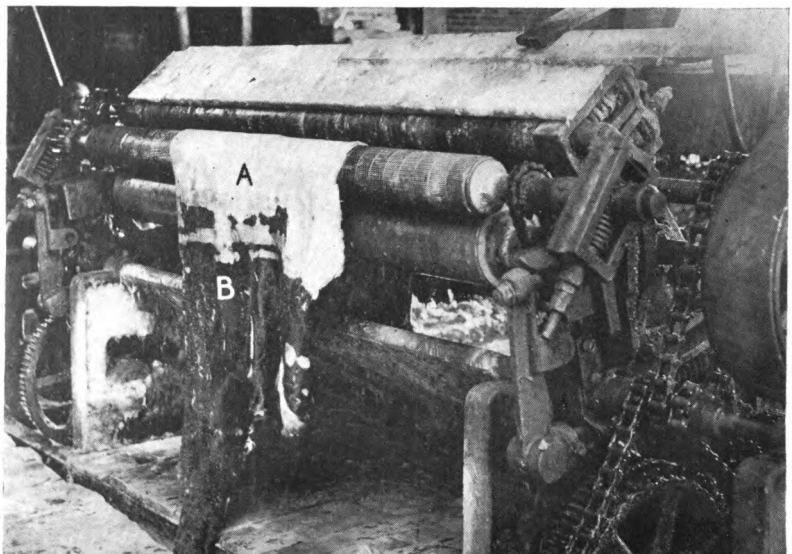
"Why don't you make leather like that which the Indians made?" asked The Student. "I should think it would be very good leather."

"To tell you the honest truth," replied The Tanner, "our processes of making leather, even in these days of high civilization, aren't very much different from those of the Indians. It's true enough that we have metal machines and tools in place of the stone or bone tools of the Indians, but we tan leather and fat liquor it, after the manner of the Indian tanners."

"The early settlers must have been pleased to find the Indians making leather when they came here," said The Student.

"Indeed they were," continued The Tanner. "They used a lot of the buckskin leather that the Indians made. So did the American pioneers who settled the west. So did the cowboys of the plains. I think the name 'Buckskin Bill' still survives. It tells of the men who dressed in buckskin."

"But there must have been some tanners among the early settlers."



UNHAIRING A HIDE BY MACHINERY.

The operator throws the hide over the pneumatic bed roll, and draws it towards him, while the blades of the operating roll remove the hair. The picture shows that the hair has already been removed from the (A) part of the hide, while it still remains on the (B) part. The operator will turn the hide about, and have the machine remove the hair from the (B) part.

"Certainly there were. The first tanners were probably in the settlement at Virginia. Experience Mitchell, a tanner, came to Plymouth in the ship Ann, in 1623. Francis Ingalls, another tanner, settled in Lynn in 1630. Philemon Dickerson was granted leave to make "tan pitts" in Salem in 1630. By 1650, there were 51 tanners in Massachusetts Bay Colony."

"What brought so many tanners over?"

"Why, the new country offered unusual opportunities. It was growing fast, and the more people in it the more leather goods they required. As early as 1630, Francis Higginson, minister at Salem settlement, wrote to England, telling of great increase in cattle, sheep and goats, and also mentioning 'stores of sumac and trees, good for tanning and dyeing of leathers.' Besides, there were the skins of deer, and other beasts of the forests, for which early settlers gave to the Indians beads, gun powder and whisky."

"Were things cheap in those days of plenty?"

"Well, one colonist bought a whole quar-

ter of a venison from an Indian and gave him a knife in payment for it. In some settlements he was counted a poor man who had neither sheep nor goats. There was a public cowherd, whose duty it was to drive cattle to pasture and take care of them daily. Many a settler made a tan pit in his yard, and tanned leather in it, using bark which he cut from nearby trees."

"Costs of living must have been cheap those times."

"I imagine that they would be these days, if every man kept a flock of sheep, or goats."

"But we've grown in to large cities," said The Student, "and one may not keep sheep, nor goats, in a city, even if there were a public cowherd to drive them to pasture."

"That's true enough. In this country the cities have grown faster than have the farms. Even in colonial days, we didn't have enough hides and skins, and at one time the General Court of Massachusetts forbad exports of them. After the Revolution, merchants began to send ships to Russia, Africa and South America and even China for hides

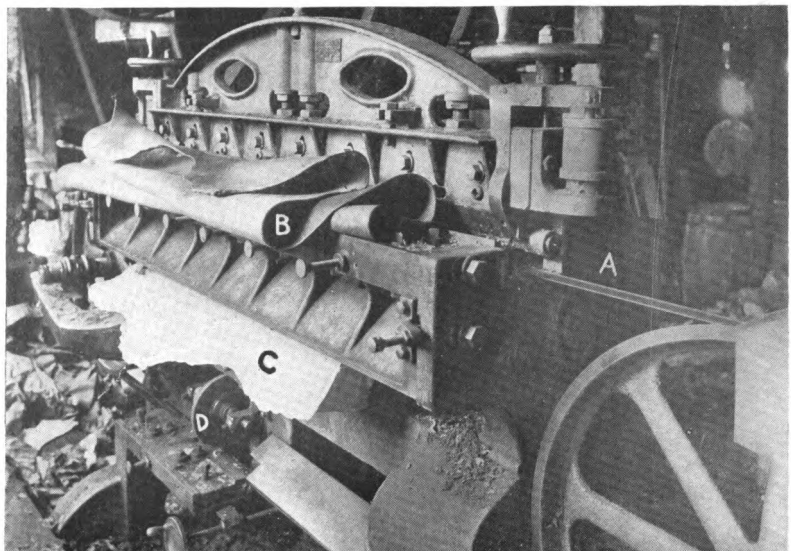
and skins. You've read, of course, that story 'Two Years Before the Mast,' an American classic, though it is but a story of a voyage to buy hides along the Pacific coast.

"But we've raised more cattle in this country as we have grown," argued The Student.

"Yes, we have," replied The Tanner. "But never enough. The pioneers drove cattle before them, as they went west. There were great herds on western ranges. Fifty years or so ago, Gustavus Swift, a Cape Cod boy, went west, and laid the foundations of the packing house industry of Chicago. He helped to make Chicago one of the important hide markets of the world, for he assembled millions of cattle in Chicago stock yards, and he dressed them for food, and prepared the hides for the tanners. But particularly in recent years, the population, and its need for leather, has increased faster than the cattle.

"I imagine that as the country grew that tanners had to increase their facilities for making leather."

"Oh! yes, the tanners grew with the country, all right. First, they had their vats out



THE BELT KNIFE SPLITTING MACHINE.

(A)—The knife that revolves over pulleys, and cuts the hide in two parts.
(B)—The grain split, or upper part of the hide.
(C)—The flesh split, or lower part of the hide.

of doors. Then they built little shops. Next they built larger shops. Sometimes they lived in the second stories of these shops. Then, about the time of the Civil War, they began to build big shops. These days they have mammoth plants that are bigger than some whole towns of colonial times. Besides, in recent years, we have brought a lot of machinery into use, and that has multiplied and improved our product."

"Tell me where your machinery came from. It must be an interesting story if it is like the other stories you have told me of the development of your trade."

"I like to tell the machinery story," resumed The Tanner. It's longer than the other stories I have told. It seems to me a story of a typical American achievement, and, to tell the truth, I am a bit proud of it.

"One of our first important machines was the splitting machine. Samuel Parker of Newburyport, took out a patent on it in 1809. Before that machine came into use, a leather manufacturer would shave down a piece of leather to the desired thinness, just

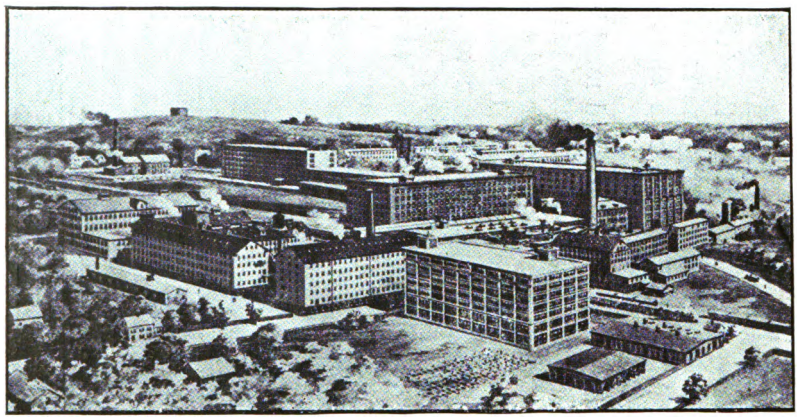
as a carpenter shaves a piece of board with a plane. The shavings were thrown away. That was wasteful, of course. When Parker's machine came into use, a leather manufacturer could split a piece of leather down to the desired weight, and could save the split and sell it for leather for shoes or other articles. It made two pieces of leather where there was one before. One was the grain split and the other the flesh split. It has added billions of feet to the leather supply of the world.

"The next important machines were those for cleaning skins, or fleshing and unhairing them, as we say in the trade. First, the inventors tried to make a machine that would move the skin against a fixed knife, so that the knife would clean the skin. Then they tried a device for moving the knife against the skin as it was fixed on a table. But they did not really begin to get results until they put the two ideas together, and made a machine with a table that would move the skin against the knife, and a cylinder that would move the knife against the skin. Mellen

Bray, a Yankee genius from the state of Maine, was the man who did this trick. That was in about 1850. I suppose it has saved the labor of millions of men since it was brought into use.

"Later, there were invented machines for finishing leather, and a remarkable machine for measuring leather, showing the number of square feet in each skin. In about 1880, the Vaughn Machine Co. began to organize the leather working machinery. They invented and developed machines to equip a tannery completely. They spread their machines all over this country and Europe, and through their enterprise they really forced a revolution in leather making from hand processes to machine processes. There were four Vaughns, J. N., a Maine mechanic, and his three sons, George C., Ira, and Charles P. They retired from the machinery business some time ago, but not until they had seen machinery put in to nearly every tannery in the civilized countries of the world."

"That's a very interesting story of machinery," remarked the student, "but I've al-



THE MAIN PLANT OF THE A. C. LAWRENCE LEATHER CO.

Showing how the little tannery of Ingalls time has developed to the great leather factory of today.

ways heard that leather manufacturing is largely a chemical process. Indeed, I've heard so much of secret chemical processes of tanning leather that I've always imagined a tannery a sort of huge laboratory.

"You're both right and wrong," replied The Tanner. "The chemical processes of tanning are important. But so are the mechanical processes. Also, so are the buying of raw material, and the merchandising of the finished product. Leather making is certainly much more than a matter of chemistry these days."

"There must have been a development of the chemical processes of tanning, corresponding to the development of the machinery processes of leather manufacturing. Perhaps they are quite as interesting."

"Yes, the development of the chrome process of tanning makes, I think, a quite thrilling story. As I have heard it, American people were using a great deal of French kid leather, that was imported from France. The French tanned it with alum and dressed it with egg yolk, and let it lay six months to

"age" or until the alum salts in it oxidized and became insoluble and would not wash out of the leather. American tanners tried to make leather like French kid. William Armstrong, of New York, even imported a French tannery, the machines, the methods and the men. But American tanners could not make kid leather as good as the imported French kid. They were not willing to let it lay six months, to "age", and for the alum salts to oxidize and become waterproof. The alum tannage washed out of their leather. They despaired of making leather as good as the French tanners. But Patrick Lennox, of Lynn, did tan leather with alum, and set that tannage with a gambier tannage, and made a leather that was a rival of French kid.

"However, the real American victory came through the development of the chrome process of tanning. A New York leather man asked August Schultz, a chemist employed by a Brooklyn dyestuff firm, what would set the bark tannage in the leather that American tanners made, to make it waterproof, so that the tannage would not wash

out when wet. Schultz suggested that chrome be used. He put a skin in a chrome bath to show how the chrome affected the leather. It came from the bath blue in color, and stiff and hard. American tanners who saw it laughed at it. It looked nothing like the red leather with which they were familiar. Besides, it was too hard to make into shoes.

"But Robert Foerderer, a young tanner of Philadelphia, had the idea that Schultz was right. He chrome tanned skins a number of times, and he found them thoroughly tanned, and as waterproof as leather could be. But they were too stiff and hard. Some how or other, he learned to treat them with an emulsion of soap and oil or to "fat liquor" them, as it is called today. That made them soft and supple. Really, this process, which is very important in modern tanning, is but a modification of the old Indian method of softening a deer skin by dressing it with fat.

"Foerderer became a very successful tanner. He called his chrome tanned leather Vici kid. It took the place of the heavy bark

tanned leather such as the cowhide leather of which grandfather's boots were made. It swept a number of old school tanners out of business. The chrome process is commonly used for making upper leather for boots and shoes these days. It is the best leather there is.

"If you will listen a moment longer," continued the tanner, "I'll tell you of the Chrome Tannage Co. It took over Schultz's patent on the chrome process, and paid him $60,000 for it. Foerderer, who had developed the process, and the Beebes, Boston leather merchants, who were very good friends of his, were members of this Company. It undertook to control the chrome process of tanning, and to require tanners to pay a royalty of 12½ cents for each dozen skins that they tanned by the chrome process. Soon, there were lively times in the leather trade. Some tanners tanned leather by the chrome process, and declared that the Schultz patents were worthless. They said that leather had been tanned by chrome years before Schultz' time. The Tannage Patent Company sued them.

Other tanners used the chrome process secretly. They locked their doors, so that no agents of the Chrome Tannage Company could learn how they were making leather. The Company had detectives, who posed as workmen, seek employment in these tanneries. Thereupon the tanners swore their workmen to secrecy. They even bought chemicals, and dumped them down the sewers, to deceive the detectives. The suits in courts, and the struggles between the tanners and the Tannage Patent Company, were prolonged until the patents expired and became public property. Now the chrome process is commonly used for making upper leather."

"I should think that Schultz, the inventor, should have had some reward for his efforts," said The Student. "If what you say is true, he revolutionized the American industry of making upper leather, and conferred great benefit not alone on the tanners, but on the people as well."

"I've heard some tanners say that there should be a monument to Schultz, for he

was a great benefactor of the leather industry," answered The Tanner. "But, unfortunately, we Americans often neglect to honor men who do us real great service.

"But has the process of the Moors been abandoned?" queried The Student.

"No," answered The Tanner. "We still tan leather in sumac. We also tan leather in barks and extracts, particularly sole, harness and belting leather."

"The extracts, I suppose," said The Student, "correspond to the dust from a rotten stump, which the Indian tanners used."

"Perhaps they do," said The Tanner. "But we use a great variety of extracts, such as oak, hemlock, chestnut, spruce extracts, and quebracho, and many strange barks and nuts from the tropics. Indeed, we draw our raw material from all parts of the world. We get our hides and skins from practically every country, tropical, temperate and even Arctic, in which cattle are grown. We get fish oils from Newfoundland and Sweden, quebracho from Argentine, logwood from Jamaica, chrome from Turkey, myrobolans

from India, and chemicals from the mines of the world."

"Surely, it is very interesting history that you are telling me", said The Student. "It's a wonderful change from the primitive ways of early tanners to the marvellous chemistry and mechanics of the leather industry of today. But, tell me, what are American tanners doing today?"

"That's a big question," replied The Tanner. "But I'll answer it as best I can. Our industry in these days is one of the seven great industries in the country, if we include with it the allied industries, such as the boot and shoe, the harness, the belting and other industries making leather goods. We have in this country nearly 800 tanneries, employing 15,000 workers. These tanneries make into leather nearly 150,000,000 hides and skins annually, and the leather is worth nearly $400,000,000. A billion feet of this leather is used for making boots and shoes. Exports of leather, and of leather goods, including boots and shoes, total to more than $100,000,000 annually."

"Certainly, that is a huge industry."

"It is, that's true", concluded The Tanner. "But it will be bigger in the future. Men are studying leather making these days more thoroughly than ever before. They're bound to make better leather and more of it."

"I believe that to be true," responded The Student. "I've heard that leather is the barometer of civilization. As leather is improved, civilization is advanced. So if I study leather making, and seek to improve leather, I help to advance the standards of civilization, which means better living for the people."